

Job skills at the flashpoint of economic, technical and organizational change

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SOCIOLOGY IN SWITZERLAND

Wandel der Arbeitswelt

Job skills at the flashpoint of economic, technical and organizational change

Hans Geser

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1. Point of departure and problem definition

A manifold of economic, technical and organizational developments is currently causing rapid and dramatic changes in Swiss industrial employment: at least roughly comparable to comparable to the changes seen in other highly developed countries (cf. Smith 1997) - Catchwords like "globalization", "lean production", "business reengineering", "CIM", "eco-management" or "customer focus" describe - albeit vaguely - the individual causes of a complex transformation process, in the course of which the organization and role structures of companies (and, in their wake, the qualification requirements imposed on employees in all occupational groups) have changed in a profound way. The complexity and ambiguity of these developments is exacerbated by the fact that the firms of different branches, size and regions are exposed to totally disparate environmental conditions and, given the growing arsenal of alternative technologies and organizational models, will respond differently to the same challenges (cf., for example, Gittleman/Horrigan/Joyce 1998).

Since the number of response options is increasing, the reaction of each firm will depend more and more on its endogenous make-up (enterprise philosophy, management concepts, etc.) on the one hand, and on its contextual embedding (e.g. in industrial districts) on the other.¹ This means, of course, that the possibility of transferring the findings of foreign research to Swiss conditions is strictly limited - given the fact that only relatively few studies of the small and medium-sized structures which are typical of Swiss industry exist. Likewise, social science does not have sufficiently tested theoretical models available from which the changing trends in industrial skill requirements can be meaningfully derived.

Previous studies of the change in workplace qualification are few, both in English and in German research. Moreover, these studies have tended to confine themselves to the technical sector (especially within manufacturing), while service occupations (with the notable exception of commercial employees) have been virtually ignored (cf. Huisinga 1990: 97; Smith 1997).² In addition, the few good studies that do exist have generally been of little benefit in

¹ On the significance of geographical-cultural factors, see for example the comparative studies of Ivana Paniccia on industrial districts in Italy (Paniccia 1998).

² One of the most comprehensive and careful studies is the IAB and Prognos joint study "Working Landscape by 2010" (1989), which makes precise predictions for Germany as to how the quantitative need for different levels of skill will change over the coming 30 years (cf. Hofer/Weidig/Wolff 1989). However, the validity of this study is marred by the fact that, due to the economic, technical and organizational (and global) developments of the early 90s, very different constellations predominate today which necessitate a radical restructuring of all forecast models. Hence the dramatic impact of globalized trade (WTO), of "lean production" and information technology, for example, is insufficiently reflected from today's point of view. In addition, the study's yield

practice, because the implications for the reform of professional and vocational training have usually been neglected:

"We are also of the opinion that, contrary to widespread belief, there is no qualification research in the Federal Republic based on the didactics of vocational training. The available research on the impact of technology and technical application, on the change in career structures and occupational development perspectives, only tackles questions of vocational training indirectly or at the periphery and regards skills mostly from the aspect of the formal qualification available." (Huisinga 1990: 97).

The uncertainty as to the way the current (and, quite properly, the future) demand for skills and qualifications are going to develop has all kinds of negative repercussions, which also affect the *future supply* of occupational skills. the uncertainty about future needs is a reason for many firms to reduce the number of their apprenticeships - and, for even more young people, an excuse to do without specific vocational training.

On the other hand, many scant resources are wasted on mismanaged training and education programmes because it transpires in retrospect that the supply is not met with the demand on the labour market. This is aptly demonstrated by the fact that recently (i.e. based on the 1990 Swiss census) over 50% of all those in work were employed in a job other than the one for which they had trained (Sheldon 1995). The fact that over 30% of all career changes took place before those affected reached the age of 25 shows clearly just how much *short-term* labour market forecasts are needed.

Because "market transparency" is lacking to such a great extent, there is little reason to hope that supply and demand for occupational skills will automatically regulate themselves in the marketplace, as defined by neoclassical theory. This is borne out by the fact that, even in periods of pronounced unemployment, industry will complain about a lack of highly qualified technical staff, and that statistically the percentage of "suitably qualified" workers employed in the service sector declined from 83% in 1970 to 71% in 1990 (cf. Sheldon 1995). This problem of incorrectly allocated training investment is growing to the extent that increasingly even highly skilled workers are employed in insecure jobs and have to accept unexpected breaks in their career, which reduces the investment value of expensive training pro-

in forecasting skill requirements is relatively slight because it concentrates on development trends at the level of "activity fields" (without analysing in detail their causal effect on the demand for skills).

grammes.³ Thus we have a situation developing where unemployed workers who are eager to learn can refer to an obvious wealth of education and retraining opportunities, yet are unable to judge which qualification options will guarantee adequate career opportunities, given the state and future development of the labor market.

In recent years, many companies have responded to fluctuations in the profit situation through far too sweeping downsizing measures, in the course of which irreplaceable human resources have been lost. In future they will have to learn to check such fluctuations by gentler internal strategies, which are compatible with the long-term maintenance of their staffing resources (Abbasi/Hollman 1998). This stabilization is also a necessary condition for employees to identify more with the enterprise and be motivated to take part in company training and retraining schemes in the interest of their own longer-term employment and promotion opportunities (Abbasi/Hollman 1998).

2. On the growing complexity and unpredictability of the change in occupational skills

In the traditional career world, vocational skill requirements are relatively transparent phenomena because they are attributes of roles which, on account of the great stability of technology, job organization, market environment and the general social context, likewise enjoy great stability. This permanence of occupational roles has provides favourable conditions for making such requirements the object of structured training courses, which in turn - as in the case of the craft guilds since the late Middle Ages - are subject to traditionalization.

In modern societies, the rapid and varied changes taking place in all areas of job organization and the industrial environment cause the skill requirements to change in an unclear and unpredictable way.

Typically, changes in skill demand will occur as unplanned and unforeseen side effects of company decisions: e.g. whenever it is decided to renew the machinery, to introduce teamwork, to penetrate new product markets or to reorganize customer services. The faster and

³ On the increasing destabilization of the employment conditions of senior level employees, see for example Smith 1997; Hirsch 1993; Brodsky 1994.

more complex these changes are, the less likely it is that their (direct or indirect) impact on skill requirements will be consciously perceived or registered objectively – so that neither at the level of operational activity (e.g. with decisions affecting recruitment) nor at the level of organizational policy measures (e.g. with the reorganization of vocational training) the proper conclusions are not being drawn.

To a certain extent, the skill profiles are much too unstable or too heterogeneous to be linked to measures more long-term and large-scale in nature: e.g. when it is clear that they will change with the next generation of software or at the next reorganization stage of the company. Hence Baethge and Oberbeck conclude that no safe global prognoses are possible where the development of skill requirements in office jobs is concerned (Baethge/Oberbeck 1986: 308).

In the manufacturing sector there is also the problem that fully automated production technologies are not introduced into the company as holistic systems, but rather as limited "island solutions". The consequence of this is that many residual activities (e.g. loading, maintenance, repair, etc.) are left for the staff to deal with and do not promote a consistent role image, but can change again with each new innovation (cf., for example, Scharfenberg 1993).

Given all the ignorance of specific skill developments and their summative effects on the overall labour market, one hypothesis at least remains relatively undisputed: that the working environment is becoming *ever more heterogeneous* in regard to the skills demanded.

The causes for this stem from the fact that within both the private and public sector:

- a) there is an ever-expanding range of the products and services being created,
- b) increasingly diverse technologies are being used,
- c) increasingly varied organizational forms are being applied,
- d) increasingly different types of sales markets are being cultivated.

Hence the most recent economic developments have meant, for example, that besides traditionally Taylorist operations - which still continue to flourish - "post-fordist" structures have also appeared in the course of "lean production" or "management reengineering" (Lowe 1998;

Betcherman 1996) or that besides the companies still geared to domestic markets there are increasingly companies operating in a global market environment.

It is also apparent that, with the expansion of the tertiary sector, there is increased polarization in the skills found on the labour market because while, on the one hand, the more demanding positions in the technical and commercial sector are expanding faster than average, the unskilled jobs in retailing and catering are expanding faster than average, too (Lowe 1998). Certainly in North America the prevailing view is that in future a deskilling of the labour market could well occur in net terms because the expansion of the unskilled service occupations is quantitatively predominant.⁴

While in the early 80s there was still more or less universal approval of strategies aimed at increasing workers' flexibility, flattening hierarchies and informalizing work structures, a much different view has taken hold today, namely that such measures are only suitable for certain lines of business (or organizations).⁵ It is by no means true, for example, that all businesses today are forced to act in parallel by having to offer their customers more sophisticated and individualized products and services, constantly develop new products or operate in a globally competitive environment.

3. The reduced causal impact of technology

The industrial age was characterized by a close dovetailing of man and machine: human labour had to be precisely integrated into the logic of the assembly line or adapted to the operation of a particular piece of equipment. In contrast, all developments linked to the concept of "automation" constitute an evolving relationship of mutual independence between technology and work. Hence, on the one hand, closed technical systems emerge, which function largely without human intervention, while, on the other, equally independent processes of job planning and programming are to be found, which can now be designed according to their own psycho-social principles:

⁴ Cf. for the USA: National Centre on Education and the Economy 1990: 3; and for Canada: Canadian Labour Force Development Board 1994: 20-22).

⁵ Cf. on this point the American Department of Labor Fact Finding Report, 1994, 45.

"The use of technology leads in principle to a greater detachment of the worker from the mechanical processes so that a temporal and spatial separation of the concrete labour activity from the technical production process is facilitated. The programming, control and supervision of a manufacturing process today largely occurs in a distant office room. In addition, new opportunities are opening up for flexitime arrangements." (Bungard 1990: 203).

At the trial and initial application stage of new technologies, there will be an increased demand for highly skilled personnel who are capable of understanding the handbooks supplied, of integrating the new equipment into the overall framework of the enterprise, of correcting unexpected teething problems, of drawing up maintenance plans, of instructing the machine operators, etc. However, this demand will subside again once any frequently occurring faults have been rectified (or at least become easily rectifiable through routine operations) or once software systems have become so user-friendly and self-explanatory (or even self-correcting) that their regular use no longer requires any special knowledge.

"A demand for qualified personnel exists with the development and extension of CAD systems, with the adaptation to specific operational requirements and the production of support programs.

Should the company cover the staffing of the CAD division with its own personnel, as is the norm, there is the chance, particularly at the run-up stage, for qualified technical draughtsmen and specialists to extend their skills as "men of the hour" and to acquire additional EDP and programming knowledge.

During the transition stage to routine use, however, a reverse trend is discernible: if the system is running satisfactorily, then qualified personnel are withdrawn (they take over the share of the actual creative design activities), while technicians are now responsible for producing the CAD drawings, who mainly function as machine operators.." (Hügel/Schmid 1984: 134).

In keeping with these findings, the IAB prognosis study comes to the conclusion that the severe reduction in traditional manufacturing activities is unlikely to be met in the long term with any rise in the number of jobs in the areas of repair and maintenance. This is because the repair needs of technical systems are tending to diminish thanks to improvements in quality (Hofer et. al.1989: 235). What is more, many modern technologies do not necessitate any specific form of job organization, but - quite the reverse - offer tremendous scope for manoeuvre,

which can be put to a variety of uses depending on the resources available and the cultural-social conditions predominating.

"Theoretically it is also conceivable to organize production so flexibly over the long term with the aid of the new technologies that it can be combined in large areas of the economy with a very variable size and structure of the workforce and thus be brought into line with the particular labour supply. Studies show that the skill demand of companies can be engineered and that there is no inevitable constraint from technology and the subsequent organization of work, but rather that considerable scope for flexibility exists in the organization and staffing of jobs." (Klauder 1990:113/114).

Thus it can be seen in the technical office sector, for instance, that no urgent changes in skill demand have resulted from the introduction of CAD because all sorts of factors involved in the actual program design (and the organization of work built around it) will determine which job roles and skill requirements come out of this (cf. Berger et al. 1991: 151). And in the field of CNC technologies in particular, international comparative studies have shown that it is the skill level of the workforce in fact that affects the organization. Hence in Germany, where there is a high level of vocational training, a horizontal organization of competencies (involving great autonomy for the operative workforce) has developed (cf. Sorge et al. 1982), while in France more bureaucratic structures, characterized by a high, vertical division of labour, have grown up (cf. Francis, 1986: 89ff).

In general, new technologies allow socio-culturally defined (e.g. national specific) determinants of job organization to manifest themselves more noticeably than before, according to the empirical findings (cf. Sorge et al. 1982: passim). Likewise, there is an increased probability with the use of advanced computer technologies that differences in the market environment or in industrial social-partnership relations will impact more deeply on the company organization and qualification structure.

Hence one American study has revealed that CNC technology leads to a greater skill level among production workers, particularly in those firms where the unions are well-organized and which do not manufacture mass products, but rather a variety of goods in smaller batch sizes (Kelley 1990). The same study also reveals that modern technologies help to intensify the differences between small and large enterprises. In the small firms there is a markedly

higher skill level because they tend to derive benefit from the new possibilities of role merging. Conversely, the large firms use the same technology to make their - already very high - vertical role differentiation even more acute (Kelley 1990).

If traditional occupational skills (e.g. "craft" skills) were tightly related to the flow of work at the operational level, what is increasingly involved here are "reserve skills", which only need to be mobilized in rare exceptional cases (e.g. if a complex technical system breaks down or, say, an atomic reactor gets out of control - q.v., for example, Hirschhorn 1984: 69f; 74ff). Accordingly, these skills depend on which incidents are deemed probable and which procedures are provided for such ex ante situations.

Likewise the impact of information technology on the roles of commercial employees (e.g. secretaries) appears relatively difficult to predict because it is more heavily dependent on organizational variables than on the hardware and software used:

"On the whole, potentially very divergent developments in relation to skill requirements should be assumed for the employees at the level of the secretary's office - often even within the same company. This can be seen in the tremendous lack of agreement among the experts interviewed on this question. Which direction this trend is going to take in the particular instance, crucially depends on the organizational model chosen." (Katz et al. 1987: 106).

If managers are objectively in the position today, thanks to information technology, to carry out the majority of duties without the need for ancillary staff, then the effective division of labour in the office will depend even more on how far they are subjectively also prepared to do this (Katz et al. 1987: 147).

Finally, it increasingly appears to be the case that there are no deterministic effects on the *quantitative scale* of employment associated with technical progress per se. This is because organizational decisions largely determine whether, for example, superfluous staff or underutilized posts are eliminated or allocated extra duties. Hence we find productivity increases that occurred in the clerical sector of the 80s (cf. Katz et al. 1987: 140) only leading to tangible downsizing in the recession-hit years of the 90s.

4. Organizational and qualificational change: the implications of "functional flexibilization" for skill requirements at staff and management level

4.1 "Numerical" and "functional" flexibilization

Most the different concepts of company restructuring and the various empirical developments at plant, department and job level converge in the central concept of "flexibilization". This term comprises all action and processes with which modern organizations distances themselves from the classical model of bureaucracy (in the Weberian and/or Taylorist sense - q.v. Wood 1989; Smith 1997).

Analytically it is useful to make an initial distinction between "numerical" and "functional" flexibilization. **Numerical flexibilization** means that firms become more adaptable by loosening their contractual relations with their members. Following the ebbs and flows of their order book and work loads, they may adjust the size of the workforce ("atmendes Unternehmen"), switch to temporary job contracts or part-time jobs, or vary the proportions of skilled and unskilled workers (Atkinson 1985; 1987; OECD 1986; Graham 1995; OECD 1997: 131).

Evidently, such strategies can be applied to all sectors and all company departments and, compared with the more intraorganizational (i.e. mesosociologically oriented) perspective of functional flexibilization (see below), it is better suited to accommodate macrostructural effects (of growing structural unemployment, for example).

Numerical flexibilization typically causes uncertainty among the workforce with regard to their future employment and promotion prospects, with the result that their willingness to acquire new skills or qualifications may decline (Smith 1997). Hence, it has its widest reach in societies with a low level of training and poor job security, such as the UK or the USA (Smith 1997; Pal 1995; OECD 1997: 150f).

Functional flexibilization, on the other hand, aims to replace bureaucratic Taylorist systems of production with more flexible "post-fordist" ones - the goal being to adapt more quickly to changes in the markets and offer a more variable response to the needs of different clients (cf. Piore and Sabel (1984); Lash and Urry (1987); Katz (1985); Mathews 1992; Streeck 1987).

An organizational sociological perspective tends to dominate here and the arguments are heavily focused on the industrial sectors (particularly on the firm's production departments - q.v. Brewster 1997).

Specifically the following aspects are involved (cf. OECD 1997: 130ff):

- 1) Hierarchical structures become flatter, and the responsibility of each hierarchical level is increased.
- 2) The totality of all company processes is subject to systematic performance optimization ("total quality management"), which frequently finds expression in a process of formal certification (e.g. according to ISO 9000). Each member of staff is expected to become actively engaged in problem-solving, even to take on joint responsibility for the final quality, as well as be prepared to adapt to the demands of changing technical and organizational roles (e.g. through further training).
- 3) Job roles become more polyvalent in that they comprise a larger spectrum of different activities ("job enlargement"), while the rotation of staff between various roles will increase, too.
- 4) An increasing part of the work organization is borne by self-regulating groups, which collectively decide on role assignment and work schedules and collectively shoulder the responsibility for the results ("team empowerment"). Communication channels are more open, and "upward communication" in particular is promoted through such initiatives as "quality circles", teams of quality controllers, whose aim is to continuously improve the production process.
- 5) Customer orientation ("customer focus") becomes the dominant structuring principle, partly replacing more traditional bureaucratic orientations (towards instructions and rules).
- 6) In contrast to the diversification trend of the 70s and 80s, firms tend to concentrate their resources and activities in the narrow field of their "core competences", where there is no question of their competitiveness; auxiliary functions are subcontracted out ("outsourcing"), so that commensurate with their own staff reductions ("downsizing") increasing employment opportunities occur in the (usually smaller) supplier firms.

In general, functional flexibilization is diametrically opposed to numerical flexibilization in that great *intraorganizational* adaptability is required of the individual members of staff. They must be able to fit into teams, permanently develop their skills, adjust how they interact with

colleagues, line managers and customers, adapt to new technologies, etc. Accordingly, it tends to be found in companies and enterprises which can rely on relatively well-qualified staff and where workers are tied to secure, long-term contracts (e.g. Japan or Germany - q.v. OECD 1997: 150).

What is extremely common, however, is a combination of both strategies, whereby "functional flexibilization" is reserved for a core staff of regular employees with above-average qualifications and a long-term commitment to the company, while "numerical flexibilization" is increasingly implemented in the employment of "fringe workers", who are locked into precarious temporary or part-time contracts without the opportunities for developing their skills or gaining promotion (Pal 1995; OECD 1997: 130).

Remarkably, both numerical and functional flexibilization concepts share the premise that the way to increase productivity is not primarily through further *technological upgrading (automation or computerization) of the operational processes*, but rather by a *better use of human capabilities and informal interaction processes*. All the more recent models of company organization focus on those individual and microsocial "primary achievements" that are based neither on complex technology nor on sophisticated organization/administration, but rather on the empowerment of informal, decentralized cooperative structures.

Through comparing the change in company forms and job roles internationally, the OECD has come to the conclusion that strategies of functional flexibilization have become commonplace in all its member states (OECD 1997: 130ff).

According to a more recent representative survey of American companies (Gittleman et al. 1998), some 42% of all firms introduced at least *one* measure of organizational flexibilization in the 90s (the most frequent being "total quality management", teamwork and job rotation); in companies with over 50 members of staff, the figure is even around 70%. However, in the majority of firms (approx. 90%), only isolated measures have been realized, leaving the basic Taylorist structures untouched (Lowe 1998; Betcherman et al. 1994). One exception is the automobile industry, where forms of lean production have met with fairly widespread implementation (Green/Yanarella 1996; Lowe 1998). In Europe, too, equally widespread developments towards greater flexibilization can be observed (Brewster/Mayne/Tregaskis 1987) - al-

though clear differences between the north and south of the continent remain and, as in the USA, partial reorganization instead of total transformation is the norm.⁶

In general, functional flexibilization strategies are more widespread in the industrial sector than in the service sector (Bassi 1995; Gittleman, Horrigan/Joyce 1998). In the tertiary sector they are most frequently found with firms which provide services other companies, while in the area of consumer-oriented services" (e.g. hotel and catering trade, retailing etc.) there appears to be less pressure (OECD 1997: 130 *passim*). Overall, these strategies are most often found with firms whose global markets make them especially prone to intense competition (Atkinson 1985; OECD 1997: 130; Bassi 1995).

The majority of the empirical studies available show that the greater the size of the company, the more likely it is that flexibilizing reorganization measures will be implemented (Lawler/Mohrman/Ledford 1992; Gittleman/Horrigan/Joyce 1998). Conversely, many findings indicate that the introduction of flexibilization measures favours downsizing – especially when this is combined with a concentration on core competences (along with the relevant outsourcing).

Flexibilization measures very often go hand in hand with the introduction of new technologies (e.g. IT systems). One reason for this is because periods of technical innovation per se will bring with them a relaxation ("unfreezing") of the existing organizational structures, which may facilitate the introduction of new practices and arrangements - particularly when combined with new recruitment (Pil/MacDuffie 1996; Bassi 1995). Secondly, the introductory phase of new technologies will increase the demand for skills (for initial troubleshooting, for instance). And, thirdly, technological rationalization frequently leads to a quantitative reduction in the workforce: with the result that the remaining employees are burdened with more variable (and partly more demanding) responsibilities (Brewster 1997; Atkinson 1985).

There is a fair amount of consensus in the research literature that flexible reorganization measures are easier to implement if the firm can fall back on a well-qualified staff (both at shopfloor and management level). This is because the process of change itself calls for a lot

⁶ The empirical findings of Brewster's study only allow conclusions to be drawn with regard to "numerical" flexibilization tendencies, however (Brewster/Mayne/Tregaskis 1997).

of training and retraining activity, culminating in a situation where permanently higher skills are demanded of employees lower down the scale (e.g. skills for independent team organization - q.v. Bailey 1993; Osterman 1994; Bassi 1995; Gittleman/Horrigan/Joyce 1998). Hence companies usually consider it necessary to implement qualification strategies ("workplace education programmes") complementary to their reorganization efforts:

"Both manufacturing and non-manufacturing firms with education programs are significantly more likely to report that reorganization of work has resulted in increases in productivity and improvements in worker morale, than are firms that have reorganized work without implementing a workplace education program. The probability of reporting positive effects of reorganization is larger still for firms that have education programs that involve an academic component." (Bassi 1995).

On the other hand, it is also true that company-based training schemes only lead to productivity gains if they are accompanied by reorganization measures (Bassi 1995).

4.2 Consequences of the flattening of hierarchies and the delegation of responsibilities

Centralized company management concepts, such as those that were being propagated several years ago under the term "computer integrated manufacturing" (CIM), have very much receded into the background nowadays. Instead, we find decentralized structures springing up everywhere, the aim being to allow a greater number of employees to share in the strategic responsibility of the company and thereby motivate staff to think and act "spontaneously" in the interest of the company without constant hierarchical supervision. Many middle-management positions in particular, which in the past were purely executive in function, have been given joint managerial responsibility:

One important reason for this is to be found in senior managers wanting to free themselves from the onus of everyday management functions because, more than ever before, they are expected to keep abreast of the ever-rapidly changing company environment and develop innovative perspectives for the future (cf. Müller/Adelt 1990: 247). A second motive is the need to shorten the official channels and thereby be in a position to respond quickly and flexibly to changes in local environments (e. g. to unexpected requests of individual customers - q.v. 4.6).

Ultimately, the broader spread of responsibility increases the possibility of misjudgements being detected and corrected early on, because there numerous employees lower down the scale who feel themselves co-responsible for the smooth running of the operation.

On the other hand, with the increased freedom brought about by the removal of hierarchical control comes also the need for greater self-control and self-discipline. More and more employees are required to achieve good results through commitment and efficiency without being subject to any form of direct supervision (cf. Müller/Adelt 1990: 241):

"The horizontal organization is intended to free employees who have long worked within the confines of functional departments and narrow job descriptions. Ideally, they will begin to take on additional responsibilities such as cross-functional training, data gathering, leadership, monitoring and self-correction. They should thrive on autonomy, develop a sense of pride, self-respect, dignity and a strong bond among themselves." (Brooks 1995).

The delegation of responsibility creates permanent tension in people: a compulsion to constantly direct their total attention to the work and share in the solution of new problems. Even staff without managerial authority are driven by the fear of making costly mistakes if they fail, and this general anxiety drives them to pay close and careful attention to the integral operations of the company. This pressure is unavoidable given that it is no longer exercised primarily by senior staff, but rather is encountered by each individual through the informal peer group pressure of the work team.

Hence firms with flattened hierarchies are increasingly dependent on employees with a fully internalized work ethic and the Protestant business ethos, which in the past was at best to be found within bourgeois elites.

"Another trait that is valued highly, according to the psychomanagerial literature, is a knack for 'prosocial' behavior - doing more for others, which in this case, ultimately means more for the boss. Such devotion is especially welcome in these days of employee 'empowerment' programs and leaderless teams; workers are expected to be the architects of their own better exploitation" (Henwood 1997).

Such intrinsic motivation (i.e. independent of wage and career prospects) is even more in demand because as a result of the flattened hierarchy there are now less opportunities for internal promotion.

4.3 Total quality thinking and active problem-solving

Generally, more and more incumbents of work roles are expected to take into account not only just the immediate effects, but also the more indirect and long-term consequences of their activity.

To take an example: painters need to learn why certain materials they use are hazardous to the environment and must be qualified to deal with these substances in a responsible manner..⁷

This example illustrates the general principle that for various reasons, occupational activities take place in an ever closer and more heterogeneous network of causal relations, because:

- a) technical errors involve increasingly severe damages (e.g. if you drive a bulldozer, supervise a nuclear power plant or pilot an airbus);
- b) noise and other forms of pollution are more of a disturbance in a densely populated urban environment;
- c) complaints and even legal action can be expected on the part of individual customers or consumer interest groups (who can nowadays call on greater legal protection than in the past);
- d) the increasing closeness of functional interdependencies (e.g. in the case of just-in-time production) means that the deficiencies arising in one firm are felt in numerous other firms;
- e) in an increasingly multicultural society, the sensibilities of the various ethnic and religious groups need to be taken into account (e.g. in advertising);
- f) more and more causal relationships have been discovered by scientific advances (e.g. of the toxicity of substances).

Accordingly, companies are under increasing pressure to provide their products and services reliably and at a constantly high level of quality, while conforming to a variety of specific standards in the manufacturing process. Hence it is important for them, in the light of product liability legislation and the presence of powerful consumer associations, for example, to avoid expensive (and competitively damaging) compensation claims. Similarly, environ-

⁷ Cf. "Wachsende Bedeutung der Ökologie in der Berufsausbildung und -Weiterbildung" ("The growing importance of ecology in vocational training and education": NZZ 24. 1. 1996).

mental organizations such as Greenpeace and the WWF keep a watchful eye on companies to ensure that their products are environmentally friendly, that test animals are not treated cruelly and that employees are not being exposed to unnecessary health risks. Furthermore, equal opportunity legislation means that employers are increasingly obliged to combat discrimination against women, the disabled and ethnic minorities in the workplace. In each case it is not simply a question of complying with the formal, legal minimum, but rather of demonstrating through informal provisions which go beyond this that the company identifies with the values and objectives behind such regulations (Müller/Adelt 1990).

More than ever before, the global competitiveness of a company depends on its intrinsic "quality capability", as defined by the concept of total quality management and the institutional provision of ISO certification. Concepts like this first developed in the area of industrial production (especially the metal, engineering and electrical industries) and are nowadays extending into the service sector (e.g. to hotel and catering, and health care - q.v. Waeber 1995). Total quality thinking is steadily gaining ground, which does not simply refer, as in the past, to the manufacturing process behind the product, but rather to the totality of all company processes:

"A good product counts for little in this day and age. What is important is quality thinking in the company, which also affects the service around the product ..." (Sattes 1996).

To implement this "quality culture" it is necessary to encourage all staff alike to be assiduous in their work, enabling them to see the overall context in which their specialized activities are located. As a result, a layer of homogeneous company-specific skill requirements emerges which apply similarly to incumbents of all hierarchical levels and occupational roles. Lean organizations are geared from the outset towards production processes that can be permanently modified, leaving employees constantly disposed to take on board new technical and organizational elements of knowledge and to make the experience acquired at the workplace useful to the whole enterprise, not just themselves (Osterloh 1994). In fact, the employees become the actual experts at identifying and solving production problems: a highly generalized skill which can readily be transferred to other companies or economic sectors (Smith 1997).

In line with this development, we also find staff training and education being strongly integrated into company policy again (whereas during the 80s the tendency was to offload these

duties onto independent external institutions - q.v. Battaglia 1997). The work team now appears as a "cost-effective" instance of socialization, replacing more expensive training schemes less directly related to the workplace (cf. 4.5).

Company specific qualifications like these can turn the firm into a community with a strong sense of collective identity, although through this type of "group thinking" may increase the risk of shutting itself off to external ideas. External seminars and courses, on the other hand, have the advantage that they encourage the influx of new ideas.

Similar effects are stemming from the fact that dealing with complex and precarious large-scale technologies increases the need for all-round evaluation and judgement skills (i.e. comprising intellectual, intuitive and emotional components in equal measure - q.v. Böhle/Milkau 1989; Hirschhorn 1984: 67ff, 96ff). While classic industrial work is defined by fairly predictable, objective demands (physical strength, tolerance to noise, heat, etc.), much more subjective and comprehensive skills seem to predominate today, which are described in terms of "feeling", "sensitivity", "intuition", etc.:

"As the worker's muscle systems are demobilized, their nervous systems come into play. Deeply involved in supervising the feedback-based control systems, workers face new tensions in the counterpoint of watchfulness and boredom." (Hirschhorn 1984: 70).

This shift from physical labour to sensory and evaluative responsibilities is attributable to the fact that in the course of technical progress only the *motor* aspects of human activity are replaced by machines, whereas in the *sensory* area human intervention may even becoming more indispensable. This is because, as we observed earlier, complex technical equipment requires careful supervision and an appropriate response to any unexpected disruptions that might occur (since these cannot be preprogrammed for - q.v. Hirschhorn 1984: 71; Katz et al. 1987: 101):

"Displacement from direct execution does not relieve the workers: instead, they become persistently vigilant and often nervous, feeling that though they execute few tasks they have become more responsible for the entire process." (Hirschhorn 1984: 71).

Such responses may involve, for example: identifying a fault in the technical system upon hearing any unusual machine noises, detecting any strange smells or observing any odd read-

ings - judgements which are very much guided by subjective impressions, since there are no objective criteria available by which to gauge the appropriate behaviour.

While the attention of the traditional craftsman was constantly focused on the operational activity in the narrow sense, with the modern worker handling advanced technology a greater "fringe awareness" is required. This is geared to the irregular and unanticipated peripheral incidents that can occur (e.g. malfunctions), which demand maximum involvement of the worker's various skills (Hirschhorn 1984: 91ff.) One of these skills, for example, is the ability to decide for him or herself when intervention in the technical operation is needed and when not (Hirschhorn 1984: 97). This relies in turn on the use of "synthetic" judgement skills, which are hard to acquire since they involve not only explicit technical knowledge, but also indeterminate factors of intuition and feeling (Hirschhorn 1984: 90ff). Such vague intuitive skills in fault detection can be of inestimable value whenever expensive machine systems are down and the need is to eliminate the defects in the shortest possible time. That is why the most modern technologies attach greater weight to certain forms of "practical intelligence", which cannot be learnt on training courses far removed from the workplace, but are best acquired (and not always reliably) through long-term contact with specific machinery.

Similarly, office workers which have delegated most of their routine work to computers can devote more of their time to questions of personal judgement (e.g. which information is relevant or which category a particular problem should be assigned to - q.v. Katz et al. 1987: 101). Thus, they too are required to bring informal mental skills of a synthetic nature to bear on their work (cf. Deker 1988; Huisinga 1990: 122ff).

There is no doubt that the computerization of organizational processes causes gigantic amounts of information to be produced over ever shorter periods, which requires selection, inspection and evaluation and, therefore, great "cognitive processing capacity" from an increasing number of employees. While in the past the exclusive possession of particular information guaranteed individuals the competitive edge, the present proliferation and ubiquitousness of information favours those who are able to analyse this ever more abundant raw material intelligently and to condense it into reliable, communicable knowledge (cf. Bassi et al. 1998).

Hence, in the USA, the number of jobs requiring higher cognitive skills rose by 11 percent between 1970 and 1990 (Bassi/Benson/Cheney 1996). Managers have to create numerous

posts for these duties and to invest a considerable amount of their own time in providing such services (cf. Müller/Adelt 1990: 244ff). What has become a much sought-after skill is the general ability to discern between relevant and irrelevant information and to make clear and definite on-the-spot decisions. As with "social competence" or "personal flexibility", this too is a diffuse and multifaceted skill, which is operationally hard to define and cannot be easily or taught in formal training courses.

Ultimately, sensory powers of judgement and discernment are in greater demand because computerization is forever forcing a choice between different approaches and creative alternatives. Thus CAD has enabled designers to generate (and accurately represent) countless design variants through the simplest of manipulations, from which then the choice can be made. And in word processing the variety of disposable fonts, formats and layouts has shifted the focus of the work from pure text production to aesthetic document design (cf. Geser/Bürgisser 1998). It is no wonder, then, that employees feel themselves invited to develop criteria of taste, which they have been able to exercise in their role as consumers, but hardly acquired in the course of their professional basic training, which remains largely technical and administrative.

4.4 Job enlargement

Various developments at the economic, technical and organizational level have the effect that jobs are becoming more varied and multifaceted – but not necessarily more demanding. Often a high degree of routine for each individual activity provides the basis for them being combined horizontally into more heterogeneous individual roles. This type of "job enlargement" stands in an inverse ratio to "job enrichment", which is probably less common and where the individual tasks involved become more complex and idiosyncratic in nature. . Consequently, there is a trend towards more extended occupational fields, as desired by the employees themselves, since these open up wider fields for potential employment.

Thus, a drastic reduction in occupational classification categories took place in the American automobile industry of the early 1990s (cf. Smith 1997). Similarly, in the Swiss metal and engineering industry, the current plan is to condense 25 previously separate jobs into seven basic jobs covering practically all areas of work involved in the sector. Likewise, the work

role of the "polymechanic" now combines duties which were previously divided over nine separate jobs.

Paradoxically then, while the entire division of labour in the economy (in terms of products) is constantly on the increase, role differentiation at the occupational level is decreasing.

There are at least four different explanations for this phenomenon:

1. Shift in mass production to smaller batch sizes

Since standard mass products can be produced a lot more cheaply in low-wage countries nowadays, domestic firms see themselves increasingly required to gear their production towards more sophisticated clienteles, who prefer the more individualized goods, customized to their particular needs.

That is why, for example, the German women's outwear industry in the 80s turned its back on standardized mass production, which until then had provided a favourable basis for highly Taylorized organizational structures (with few skilled assembly-line roles):

"The market for these products has become increasingly narrower for the German clothing industry in recent years, since mass-produced goods can often be produced more cost-effectively abroad. Domestic clothing firms are therefore obliged, if they do not relocate abroad, to occupy those segments of the sales market where quality and fashion sense, just-in-time delivery and customer loyalty are in demand.

This of course makes demands on the flexibility of the firms, which for a manufacturing organization whose model is standardized mass-produced goods can only be managed with the greatest of difficulty - if indeed at all." (Fischer/Minssen 1987: 199).

Hence it proved necessary to replace rigid assembly-line production with more flexible production groups and to match the division of labour to changing demands through allocating the seamstresses less specialized roles. This meant that only those seamstresses with fairly good overall qualifications and communication skills, along with the necessary ability to make decisions, could now be employed (Fischer/Minssen 1987: 202). Most importantly, it was felt that all workers should assume active responsibility for the overall production flow, instead of concentrating on the narrow role assigned to them as in the past (Fischer/Minssen 1987: 203).

2. Reduction in the workforce

Since decades, numerous empirical studies have revealed that firms which substitute work for capital usually experience a considerable rise in the average level of skills. The reasons for this are because

- a) such firms usually operate extremely complex technical equipment whose maintenance and functional safety need to be safeguarded by a high degree of technical competence;
- b) the proportion of personnel costs involved in the overall costs have become so small that companies are quite willing to prove generous in the further training (as well as the remuneration) of their staff (cf. Fullan 1970: Blauner 1964: 124ff).

If a firm cuts back its workforce in the course of rationalization, the tendency is that the remaining members of staff will have to cover a broader spectrum of different duties which may also include relatively demanding work. In heavily automated machine plants, for example, there is the so-called "multifunctional worker" or "hybrid worker", who combines work on the operational level with duties on the planning and maintenance level (Bungard 1990: 206). Above all, it is the traditional type of "operative" who is disappearing, because all workers must now take on extra indirect responsibilities. Accordingly, the need for unskilled or semi-skilled workers (as in the car industry) is declining massively (Bungard 1990: 206). In the local branch of a bank comprising 20 staff there may still be use for two to three less qualified office assistants who carry out purely undemanding work (filing, registering, etc.); however, once the number of staff is down to ten (or even five) employees, only fully trained staff are wanted who can also cope with more exacting customer services.

It is in this context that researchers like Gottschall/Mickler/Neubert have found that it is the typing and filing staff (particularly affected by computerization) who are entrusted with additional, more narrowly specialized duties (e.g. data acquisition), resulting in a rise in the skill requirement (Gottschall et al. 1985). Conversely, well-qualified staff (clerks, editors and managers) are often asked to take on less demanding activities (e.g. text production, correspondence, etc.) in the absence of secretarial employees (Katz et al. 1987: 107). The outcome of this is that a general downsizing of the workforce is associated with an overproportional reduction in less qualified staff. This would explain why the number of apprenticeships for simple office jobs has been falling heavily in recent years (unlike those for commercial employees).⁸

⁸ In the city of Zürich, for example, this figure fell between 1992 and 1995 from 250 to 30 (!) jobs.

Whereas in past decades a rapidly expanding "office proletariat" had arisen, the average skill level of commercial personnel began to rise again since the late 70s (Baethge/Oberbeck 1986: 316, 318; Huisinga 1990: 103).

3. Informalization of the operational structures

In general, the reduction in clearly formalized competences and responsibilities (in favour of more variable forms of team-oriented ad hoc cooperation) causes all the roles in the operation to become more vague and imprecise. The implication of this is that it is objectively more difficult to define the skills involved in a particular role, to say nothing of formalizing them as essential recruitment criteria in the form of a job specification. This means in turn that wages and promotion opportunities are no longer as strongly linked as before to individual qualifications (education certificates, previous works experience), but much more to the actual service being provided. Senior staff in particular may suffer from the fact that they can now no longer legitimize their elevated position on the basis of a given advantage in terms of knowledge and experience (Brooks 1995). Rather, they have to take on the diffuse role of a "trainer" or a "coach" for the rest of the staff: a role model more akin to a motivator or social worker than the traditional "master craftsman". Likewise, the role model of the "army officer" in private-sector managerial posts is losing functional significance because military leadership is geared far too much towards top-down hierarchical command structures.

The dissolution of distinct role structures engenders fundamental insecurity for the individual worker in relation to his company identity and status, the upshot being that the skill profiles attached to the particular job roles are becoming more indeterminate and that management itself can no longer clearly indicate to staff in which direction they should continue to improve their qualifications (Brooks 1995). In this situation, then, it is all the more important that firms should have clearly outlined strategies, mission statements und enterprise philosophies, from which the qualification requirements can be derived (Brooks 1995). To the extent that this fails to occur, the staff are given the chance to define their job specifications for themselves: with the consequence that idiosyncratic-individual value orientations and cultural (e.g. ethnical) characteristics gain more influence on work roles and intraorganizational conditions (Brooks 1995).

4. Closer linkage of technical and commercial knowledge

As internal company processes are defragmented, it is not only highly routinized roles that become eliminated in the manufacturing process, but also highly professional roles, since these are likewise based on a high degree of specialization. There is, for instance, no longer a place for engineers who only wish to apply their narrow professional, technical qualifications (Pal 1995). They all must integrate themselves into teams in which quite different skills (fore-sight, empathy, communicative proficiency, ability to relate to working practice, etc.) are demanded of them (Hammer/Champy 1995: 93ff).

"The members of a process team who collectively shoulder the responsibility for the overall process and are not simply in charge of individual stages have a completely different professional view of things. They share with the other team members the responsibility for the overall process and are not just familiar with a small part of the work. They must draw on a broader range of skills in their everyday work, as well as possess a much greater overview. While not all team members will take on exactly the same duties (ultimately they differ in their knowledge and ability), the boundaries between their responsibilities are becoming blurred." (Hammer/Champy 1995: 94).

What is increasingly in demand is "network thinking", which makes reference to all the inter-connections of a technical system or company process - not just to detailed knowledge of certain aspects. The imparting of such skills in the context of formal vocational training methods is proving very difficult because modular training programmes, which proceed from the discreteness of various specialist areas, cannot be applied (vgl. Egli von Matt 1995).

Evidently this development creates friction wherever traditional occupations have pursued a policy of strict professionalization. Thus, traditional German industry is characterized by a distinct professional orientation on the part of the technical engineers, whose main interest lies in perfecting technical solutions, without worrying about how these are to be manufactured or marketed. Such an attitude appears dysfunctional today because the competitiveness of companies relies more heavily than before on their ability to dovetail their research and development to manufacturing and marketing. This requires of the engineers that they break with professional purist thinking ("l'art pour l'art") and instead "recontextualize" their activity by entering into a close cooperative relationship with the other company departments.

"For the work of the engineers the trend of 'recontextualization' is of prime importance. Engineering within mass production was an activity 'apart', often very differently organized and performed in individual organizations or suborganizational departments. Mutual bulkheads,

'walls' between the departments, sector-specific solution priorities, deficient integration of the overall manufacturing chain and highly elaborate technical design standards generated the familiar productivity-curbing effects. Recontextualization means that the individual engineering work is combined into bundles of related development activities where communication and coordination is at the heart of the collective work.... The engineering work of constructing and developing becomes reintegrated into a meaningful context of product and process development." (Weber/Seltz 1994:177).

The knock-on effect of this for engineering training has been the demand to provide more room for a "non-subject-specific" general education and the teaching of so-called "key skills" (social skills, organizational skills, learning skills, etc.), and to sensitize the prospective technical experts more to the contextual (e. g. socio-cultural) conditions of their work (Weber/Seltz 1994: 182).

In Switzerland too, the strengths of the company management still seem to lie too heavily on the side of specialized technical knowledge (with engineers, for example, occupying many management positions), while in the areas of marketing, sales, administration and communication there is a dangerous deficit (Bobilier 1993). As a corrective measure, young Swiss managers are nowadays increasingly encouraged to study for an MBA (Master of Business Administration) at Harvard, Stanford and other top-class universities in the USA. This has brought a new management culture to Swiss companies, which unlike the established Swiss enterprise culture is less technically oriented, but based on a close meshing of technical, commercial, administrative and entrepreneurial aspects. In short, it is a model which is aimed at the greater integration of various company functions which have become too much structurally segregated in the past (cf. Beyeler 1995). Such polyvalent managers are also well-equipped for setting up and developing new company divisions (e.g. in peripheral countries). Thus, they constitute an indispensable resource for the internationalization of an enterprise.

4. 5 Team empowerment

Traditional Taylorist production structures were calculated to define the jobs involved in the operation in such a precise and permanent manner that communication and cooperation between staff was rarely necessary during the labour process. Hence Henry Ford's assembly lines at Detroit in 1915 were equipped to integrate immigrants from the most dissimilar coun-

tries fully into the production process in a short space of time, even if they could barely speak English and were not suited to group work due to their diverging customs and traditions (cf. Womack 1992: 35). And it was for similar reasons that the Swiss economy of the post-war years was in a position to integrate "guest workers" from various European countries and linguistic regions quite easily, without demanding that they assimilate en masse to local forms of linguistic and social custom.

In contrast to this, the concept of "lean production" is based on the fact that the concrete organization of work is no longer predetermined *ex ante* by the management or the production scheduling office, but rather needs to be worked out through constant communication and coordination within the work team itself, so that both linguistic incompetencies and personal incompatibilities soon become disruptive factors.

"With clearly demarcated managerial authority and with precisely defined responsibilities, friction at the level of relations was always dysfunctional. However, through the separation of head (manager) and hand (managed), the relation between quality of instruction and work was still possible. The much narrower and qualitatively different cooperation between managers and workers since then has made disruptions at the interpersonal level increasingly more likely, if only through the growing number of contacts. Inefficient conflict resolution and developments may at the same time impede creative solutions through destructive discussions, which apply less to the problem than to the person." (Müller/Adelt 1990: 241).

Accordingly, it has become more decisive that all employees command a common language, observe consensual forms of informal association and, wherever possible, originate from a relatively homogeneous socio-cultural environment.⁹ This can mean, for example, that companies will limit their recruitment to relatively narrow population segments that have the necessary characteristics (e.g. to the autochthonous middle classes) and attach a higher status to such "ascribed" social characteristics than to school achievements or specialized knowledge.

Insofar as teamwork is accompanied by a general intensification of horizontal interaction processes, productivity nowadays depends more on the "emergent" properties of group collectives rather than on the sum of individual skills. In other words: a team composed of

⁹ It is no coincidence that the concept of lean production has developed in Japan, a country which has an extraordinarily homogeneous population in linguistic-cultural terms.

highly qualified individuals can produce much feeblere achievements than a group made up of staff who are on average less talented, but are nevertheless able to work in harmony with each other (Stevens /Campion 1994). A complex combination of character traits and social skills (e.g. "helpfulness", "ability to handle conflict", "openness", "tolerance" and the like) is demanded of the members of succesful teams. These are generally hard to define and measure empirically and are therefore often paraphrased in less meaningful terms such as "team skills" or "interpersonal competence" (cf. Stevens/Campion 1994).

Because these requirements extend into areas of non-verbal sensitivity and communicative ability (Stevens/Campion 1994), it seems barely conceivable that "team competencies" could ever be reliably taught within the framework of planned training and education courses. Companies are obliged instead to select through an adequate system of recruitment those employees who, because of their cultural origins and domestic socialization, possess the necessary skills at this basic (less conscious and controllable) level of individual behaviour. This too is not easy because there are no reliable instruments for determining the desired skills, and, what is more, because the skills involved can normally have positive or negative implications depending on the precise way they are enacted.

Hence "conflict resolution skills" are demanded, but not of a kind that thrive on argument. Or "loyalty" is demanded, not blind obedience, which might stand in the way of the equally important need to be innovative and critical. Or "helpfulness" is encouraged, though this should never go so far that a person neglects their responsibilities or fails to respect the province of their colleagues. Similar ambivalences exist with regard to the composition of the teams: *heterogeneity* is, on the one hand, a *resource* because it increases the wealth of knowledge and advice available and, on the other, a *risk* because it makes harmonious cooperation and consensual decision-making difficult (Stevens/Campion 1994).

Even harder to pin down are those skill requirements which are demanded from the *senior staff* in teams of this type. What is clear is that the traditional duties of instrumental leadership (work scheduling, allocation of jobs, supervision, control, etc.) lose their significance because these functions are taken over by the team as a whole. On the other hand, the new hard-to-define job of "coaching" falls to the senior staff: of assisting the members of their team with the development of their skills, encouraging productive processes of cooperation, ensuring a harmonious socio-emotional group climate and making themselves available in a conflict situation as "catalysts of decision-making" (Stevens/Campion 1994).

It seems certain that senior staff involved with work teams are nowadays required to make their leadership skills transparent and to justify their decisions by reasoned argument since team members are in a better position than traditional "subordinates" to judge critically the behaviour of their bosses and to articulate their differences of opinion in a competent manner (Müller/Adelt 1990: 240). As Bechtler (1985) defines it, it is possible to speak of a "demythologizing of management", which causes the acknowledgement of managerial authority to depend more on actual competence and personal charisma since the formal status alone no longer commands sufficient authority.

The effect of these changes at management level is that university graduates in any discipline are increasingly expected to display social abilities such as "personality", "team skills", "cosmopolitanism", etc. Recently this has also extended to technical managers (engineers), who on account of their growing functional specialization have to work much more in cooperative teams instead of on their own (Kemp 1996: 24). If subject-based skills are still relatively important for entering a profession, the higher up the hierarchy a person progresses the more the emphasis shifts towards these more diffuse "soft skills", which the applicant is already supposed to possess - or is at best believed capable of acquiring in very laborious resocialization processes (Kemp 1996: 25).

The *master craftsman in industry* is similarly affected by the loss of significance of specific subject skills because here co-workers who achieve a dominant position (those involved in the team organization of lean production) usually surpass him in this respect (Bungard 1990: 215). On the other hand, he is still expected to operate as a catalyst and integrate marginal workers successfully, to maintain contacts with other departments and motivate the staff on their production targets - tasks for which there is no standard view of the skills demanded (Bungard 1990).

In general, team structures help to socialize the staff more strongly and irreversibly into the particular culture and technology of the firms. This means that the skills acquired within the work remain essentially firm-related (i.e. specific to the technical system employed), so that staff depend on finding sufficient recognition for their skills inside their company.

"Paradoxically, far less well-founded specialist knowledge is acquired through teamwork than would allow one to change firms or set up one's own business." (Womack 1992: 20).

4.6 The increasing "extravertedness" and "client orientation" of modern organizations

The conventional (Taylorist or Fordist) forms of industrial organization are based on the supremacy of the manufacturer over the customers, which according to Hammer/Champy – is based on the following premises:

- 1) Customers have a relatively undemanding homogeneous taste, which is easily satisfied through standardized mass products;
- 2) Dissatisfied customers do not harm business because they are fragmented and inarticulate (and also legally have few protection rights);
- 3) Customers are easy to replace; dissatisfied customers are nothing to worry about because in a world of rapidly changing markets there are always new consumers.

In the present climate, these three factors are no longer valid to the same extent for several good reasons. Customers are on average better educated and more demanding, and have become more selective in the choice of their products; they are more inclined to articulate their particular needs more forcefully and to expect high-quality services above and beyond the purchase of a physical product (Hammer/Champy 1995: 31). They enjoy much easier access to relevant information, with which they press firms into operating more with fact-based information instead of persuasive advertising. They are more readily prepared to assert their demands by means of formal complaint or even litigation, whereby they can increasingly rely not only on well-developed structures of collective association, but also on greater protective laws (such as those appertaining to the producer's liability). In short, at a time of saturated markets and declining population expansion, customers are becoming a scarce commodity, with the result that the long-term nurturing of existing customer bases is more important than canvassing new consumers or staging selective sales campaigns (Hammer/Champy 1995: 34; Pal 1995).

"It has proved more cost-effective for companies to secure greater customer loyalty by achieving greater customer satisfaction, instead of constantly acquiring new customers via strategies of customer campaigning." (Bruhn 1996).

This change of paradigm is reflected in exemplary fashion in the increasing popularity of "customer satisfaction barometers", which first sprang up in Sweden in 1989 (cf. Bruhn

1996). In the catering trade this has meant, for instance, that both the service and the cuisine are organized around the customer as the central point:

"In the restaurants the attempt is being made to remove the distinction between front and communications zone, between cuisine and customer. The customer is included, at least visually, in the event; the chef sees who he is working for." (Wartman 1994: 65).

The optimization of customer proximity necessitates doing away with bureaucratic routine procedures and letting informal flexibility prevail, thus allowing individual needs - as with customers in a restaurant, quite literally - to be catered for:

"Increasingly convenience, preprepared food, are being renounced; 'nouvelle cuisine', 'cuisine du marché', ... are the order of the day. Rigid programmes are 'out'; variety, experimentation are 'in'." (Wartmann 1994: 65).

This customer centredness finds particular expression in the capital goods industry, where the customers are mostly companies themselves and bring their needs to bear with a high degree of professionalism and negotiating power. An example of this can be seen in the enterprise philosophy of "customer focus" introduced by ABB in 1991, which uncompromisingly endeavours to bundle all company processes to the needs of the buyers. While the earlier view was that the competitive edge was best secured by internal action such as rationalization and technical innovation, now the focus shifts increasingly on the cultivation of external relationships with customers or suppliers,.

In the wake of this new orientation, industrial firms are becoming proper service companies, since market success depends on a product not simply being sold, but rather accompanied by a variety of services:

"Much of the value is the service that is built into that something - the way it is designed and delivered, billed and bundled, explained and applied, repaired or renewed. Value is dependent on the integration and connectivity of these steps throughout the production/provision of a product/service. The interaction between businesses, their workers, and the suppliers and customers who trade with them has fundamentally changed and been brought closer together." (Pal 1995)

The sophisticated attention to the needs of different customer segments demands that export firms do not just maintain sales departments in various countries, but rather that they relocate their R&D and manufacturing departments to these countries too, so as to take account of the specific needs and tastes of particular cultural settings when new products are conceived:

*"Markets are defined by the customer and no longer by the product. Geographic expansion goes far beyond export endeavours, extending to local sales outlets and operating companies of one's own, right down to 'joint ventures'. Particularly in state-influenced markets, contracts are tied to local manufacturing; often it is only separate premises that make external protective measures permeable, say for deliveries."*¹⁰

This gives rise to an increased demand for knowledge of local languages, mentalities, legal system, etc. (cf. for example Müller/Adelt 1990: 243; Klauder 1990: 120, 136). Meanwhile, training needs will come to the fore, which are less aimed at imparting specialist knowledge and skills as at acquiring social competences (e.g. self-assuredness, self-initiative, sociability and so on). Accordingly, the danger is that companies for whom the high Swiss level of wages has been quite acceptable will transfer skilled jobs abroad. Hence, the pharmaceutical industry, for example, has begun to relocate part of its research to North America, while ABB is having to produce increasingly larger sections of the power plants being sold to Asia on site because the countries buying them are jointly involved in the manufacturing process and wish to profit from the know-how of the global company (Châtelain 1994).

It would no doubt be wrong to make outside influences alone responsible for this trend towards customer orientation. It is rather the processes of technological innovation which systematically cause modern organizations of all kinds to be in a better position than before to focus their main capacities for action on their environment (instead of on the inner world of their own processes). An important reason for this is that purely internal organizational processes (book-keeping, salaries and wages, personnel administration, etc.) have a routine character compared to externally based functions (sales, marketing, etc.) and are therefore better suited to being computerized (cf. on this point: Koch 1981; Biervert et al. 1991: 61ff; Katz et al. 1987: 97).

The upshot is that

- 1) purely internally oriented jobs are increasingly subject to loss of skill and so differ increasingly from externally oriented jobs, for which good social skills and extensive specialist knowledge are vital (Koch 1981: 130);

¹⁰ Cf. "Zwang zum industriellen Wandel" ("Pressure for industrial change" - in Neue Zürcher Zeitung, 17./18. February 1996: 21)

- 2) ever smaller percentages of total personnel are required to deal with these internal processes, with the result that more and more workers are spending increasingly greater parts of their working hours on external interaction. This can mean that organizations generally are becoming more "extraverted" and demanding good communicative and interactive skills from an ever greater part of their staff (cf. OECD 1997: 145).

One significant German cross-sectional study has discovered that the majority of employees with largely internal duties experience a loss of job skills in the wake of computerization (e.g. in the sense of an objective reduction in the learning time), while commercial employees frequently register an increase in the skills demanded (Baethge/Oberbeck 1986: 366; Hofer/Weidig/Wolff 1989: 212). Analogous to this, Deker in his analysis "The new working environment in an insurance company" ascertained that clerks are able to spend more time on communicating with clients since they are no longer burdened with internal processing chores thanks to information technology (Deker 1984).

One serious consequence of growing client orientation is the superimposition or replacement of the classic internal division of labour, which is determined by job skills, working methods or formal 'responsibilities', with a distribution of roles more related to current problem solving. Hence in the paradigm of "business reengineering" the principle is that as few people as possible should be involved in dealing with each cross-company process in order to guarantee as much flexibility as possible - and a quick response to singular and unfamiliar events (Hammer/Champy 1995: 185).

To be able to respond quickly to changing customer needs, the official channels need to be shortened, preferably by giving the staff at the point of sale the authority to have as a say in deciding about product changes. This gives rise, among other things, to the polyvalent role of the "product manager", of whom very diverse (technical and commercial) skills are demanded (cf. Bleicher 1988; Müller/Adelt 1990: 238). Increasingly, industry and service problems are tackled through recourse to the "case worker", a role model from social work, who takes on the full responsibility for all areas of a "case" (such as an individual customer or his order - q.v. Hammer/Champy 1995: 73ff).

This "case-worker" from the client's point of view is a contact who may function primarily as a representative of the company, but also has a "human" face and can assist in an emergency, for example, by avoiding red tape. For more complex assignments, a whole "case team"

might have to be used. Here too the roles of the staff need to be defined as broadly as possible: each member must internalize the logic of the overall task and help to carry it along through responsible action, by stepping in for other team members, etc. In even more complex cases, a small suborganization, involving a "case manager", may be set up to resolve all the problems connected with a particular issue (Hammer/Champy 1995: 86).

The trend towards shorter, more flexible response channels is in conflict with the traditional vertical differentiation between "workshop" and "office" because this conventional dichotomy tears functionally related company processes apart (such as the organization of the manufacturing processes or the development of new product types) - for reasons that have more to do with defending status privileges than with the actual requirements of the job. Hence, as decentralization progresses, it is proving necessary to relocate the jobs of an organizational nature, which were previously reserved for the office, to the production departments - and, with that, shift the (quantitative and prestige-based) relationship between "white collar workers" and "blue collar workers" in favour of the latter:

"Through delegating planning activities to production, the distinction between 'blue-collar worker' and 'white-collar worker' is being largely eliminated. It is demanded that departmental managers and planners quit their regular posts somewhere in the office building and conduct their work where it is most effective, namely in production. This often provokes human opposition, which, if not openly voiced, is all the more strenuously channeled because there is a danger of losing prestige." (Acél/Probst 1995).

Ultimately the concept of "business reengineering" creates companies which no longer see themselves in any way as organizations with a definite role structure, but rather as "task forces" which are constantly restructuring as needs and circumstances dictate. This would mean that there is no longer a possibility of specifying clearly the skill and qualification requirements of various jobs since these are forever changing in an unpredictable way according to how the jobs are currently allocated.

The crucial skills required for recruitment would then be increasingly limited to highly generalized "key skills" necessary to regularly adapt to new constellations through relearning, intensive communication and personal adaptability (cf. Klauder 1990: 134f).

4.7 Concentration on "core competences" and "outsourcing"

Today many companies have broken with the idea (still being propagated in the 80s) of "diversification" or "conglomerization" and are concentrating more and more on the narrow area of "core competences", where their competitiveness is not in dispute (q.v. for example Prahalad/Hamel 1990; Boxall 1996). By subcontracting out auxiliary functions, an increasingly greater percentage of the total workforce is employed on these central activities (cf. Krüger 1995). This makes the workforce more homogeneous: not only in regard to job skills, but also as affects the level of training, age, gender, nationality and other features co-varying quite closely with occupational status. This in turn makes it easier to carry out the business and integrate the firm into an efficient cooperative unit. It is also a better way of optimizing the skills of the workforce, since it is now easier to specify explicit recruitment criteria and train the staff according to uniform standards. The skills required should only be less insofar as numerous operations can now be routinized and modularized thanks to the more homogeneous nature of the work (Osterloh 1994; Goldkamp 1994). Above all, the personnel charged with management duties can now be reduced since many coordination problems which are unavoidable in functionally highly heterogeneous enterprises cease to apply (Wittmann 1994).

So the widespread downsizing practised by the larger firms is at least partly determined by increased outsourcing, which is motivated by the desire to reduce the internal management workload and to focus energies on that narrow field where the firm is genuinely competitive on a global scale. The increasing expectation is that companies, through concentrating on such "core tasks", will reduce the vertical range of their manufacturing, on the one hand, and buy in ancillary services previously dealt with internally (book-keeping, marketing, telephone services and so on), on the other. This will create more niches for small and medium-sized firms, who would then find themselves in a relatively stable contractual relationship with the large company (Pal 1995). Often it is former employees who set up such satellite firms in order to then enter independently into a supplier's relationship with the same company they were once employed with. Occasionally the large companies will make credit available to encourage redundant staff to form their own enterprises. Hence, in 1994, Sulzer created a fund of 10 million francs to preserve jobs by assisting with company start-ups, while Novartis seems prepared to grant investment aid on an even larger scale (Diethelm 1996: 31).

Switzerland's future demand for job skills will very much depend on the work that Swiss firms themselves undertake or can contract out to foreign firms. Since the scope for outsourcing has increased dramatically in recent years thanks to the development of communication and transport technologies, there is greater unpredictability, which makes long-term prognoses as to the quantitative and qualitative demand for labour considerably more difficult.

One thing seems certain: highly standardized production processes will be able to be subcontracted to a constantly growing variety of less developed countries without any problem (Goldkamp 1994). Consequently, many companies will only have the option of limiting themselves at their Swiss plants to the provision of more professional services (e.g. research) or the production of more sophisticated components ("noble parts") - and thereby increase their demand for highly skilled workers (Kuhn 1995).

Appendix: Empirical frequency of flexibilization measures in Swiss companies

The frequent objection to concepts of organizational flexibilization is that these largely involve empty enterprise ideologies, which are couched in fashionable terminology and propagated at exclusive management seminars by highly-paid and rhetorically brilliant lecturers without actually affecting the internal company structures, which are seen to be shaped by more pragmatic functional necessities and by less intentional factors.

As to the prevalence of "lean" strategies in Switzerland, some insights can be gained from an empirical study conducted in spring 1998. In this survey, 2130 firms in the industry, building and services sectors supplied detailed information about the changes that took place in their plant during the years 1995-97.

Table 1 reveals that in all three sectors a surprisingly high percentage of firms implemented various flexibilization measures. At the forefront are those changes which resulted in an "empowerment" of staff lower down the pay scale and in a general flexibilization of the operational processes. With similar frequency, the firms opened themselves up more to their environment in that they nurtured more intense interactional relations with their customers, suppliers or other relevant business partners. In contrast, expansion of teamwork and job rotation was less widespread (especially in the building trade); and only a small minority of firms reduced the variety of services they themselves provided, by means of outsourcing.

Table 1: Extent of various strategies of flexibilization and lean production with companies in the Swiss private sector between 1995-97 (Percentage of firms)

	Industry	Building trade	Services
Flexibilization of working hours and wages	41	31	37
Flexibilization of operations	62	57	52
Rotation / representation	40	20	35
Autonomy at the workplace	58	44	52
Delegation of responsibility to staff	77	72	71
Codetermination of staff	55	54	57
Teamwork	42	26	37
More outside contacts (with clients, suppliers, etc.)	69	62	62
Outsourcing	20	05	08
Average total number of measures taken	4.65	3.68	4.29

From the previous research literature it should be expected that flexibilization strategies are especially widespread in the manufacturing branches because it is here that they originated historically: as measures to overcome rigidities caused by too formalized and too centralized systems of Taylorist (or Fordist) production.

Contradicting such expectations, the findings show that the differences between the secondary and the tertiary sector are relatively slight. Much more significant is the deviancy of the construction sector, where functional flexibilization strategies probably carry less weight since here traditional craft-based forms of cooperation have largely remained intact.

Corroborating this, an analysis of the frequency distributions shows that both in the industry and the service sectors extremely similar conditions of reorganization prevail (with a quantitative emphasis on three to six measures), whereas the building trade is characterized primarily by a higher number of companies not at all active in reorganization terms.

Breakdowns according to lines of business lead to the conclusion that strategies of flexibilization are found to an astonishing extent throughout the entire private sector, although it is evident that the most extensive restructuring activity takes place in the more modern, expansive trades (electronics, information technology, banking and insurance (Table 2; Table 3).

Table 2: Average number of different reorganization strategies with companies in the industrial sector between 1995-97: according to line of business and size of company (Percentage of firms)

	Size of the firm			Total
	up to 30	31-200	over 200	
Food	3.8	3.5	5.7	4.0
Textiles	3.6	4.5	4.5	4.2
Timber	3.1	4.3	-	3.7
Paper	4.5	3.5	5.6	4.7
Graphics	5.1	4.6	6.3	4.9
Chemicals	4.9	4.4	4.0	4.5
Metal	3.5	4.9	6.8	4.6
Machinery	3.8	5.1	6.3	5.1
Electrical engineering	4.7	4.9	6.7	5.3
Electronics	4.6	4.9	6.1	5.1
Energy	4.2	4.5	5.3	4.7
Total	4.0	4.7	6.1	4.6

Table 3: Average number of different flexibilization strategies with companies in the service sector between 1995-97: according to line of business and size of company (Percentage of firms)

	Size of the firm			Total
	up to 30	31-200	over 200	
Wholesale	4.3	4.8	5.0	4.6
Retail	3.8	4.4	5.0	4.1
Hotel and catering	3.8	3.7	6.4	4.0
Transport / communication	3.9	4.0	5.2	4.2
Banking / insurance	4.5	5.0	4.6	4.6
Information technology	4.9	5.2	4.7	5.0
Services for companies	3.9	4.5	4.6	4.2
Total	4.0	4.4	5.0	4.3

Practically everywhere the number of measures increases with the size of the enterprise. This is theoretically easy to understand in view of the fact that small firms often "automatically" enjoy those informal and participatory structures which can only be created with considerable effort in bureaucratic large-scale enterprises - or that they make many kinds of changes "spontaneously" (i.e. including formal implementations) due to their informality. Much more surprising, on the other hand, is that so many pursue explicit reorganization strategies *despite* their small size.

Literature

America's Choice: High Skills or Low Wages! Report of the Commission on the Skills of the American Workforce. (1990). Rochester, N. Y., National Centre on Education and the Economy.

Wachsende Bedeutung der Oekologie in der Berufsausbildung und -weiterbildung. (1996). Neue Zürcher Zeitung. Zürich.

World Employment Report 1998-99. Geneva, International Labour Organization. (1998).

Abbasi, S. M. and K. W. Hollman (1998). The myth and realities of downsizing. ARMA_Records Management Quarterly 32(2): pp. 31ff.

Acél, P. and M. Probst (1995). Intelligente Navigationssysteme in der Produktion. Neue Zürcher Zeitung. Zürich: 66.

Atkinson, J. (1985). Flexibility: planning for the uncertain future. Manpower Policy and Practice 1: 26-29.

Baethge, M. and H. Oberbeck (1986). Zukunft der Angestellten. Frankfurt / New York, Campus.

Bailey, T. (1993). Discretionary effort and the organization of work: employee participation and work reform since Hawthorne. New York, Columbia University, Teachers College.

Bassi, L., S. Cheney, et al. (1998). Trends in workplace learning: supply and demand in interesting times. Training & Development 52(11): 51ff.

Bassi, L. J. (1995). Upgrading the U.S. workplace: do reorganization, education help? Monthly Labor Review 118(5): 37-48.

Bassi, L. J., G. Benson, et al. (1996). The top ten trends. Training & Development 50(11): 28-43.

Battaglia, R. Besinnung auf die eigene Kraft. io-Management: Issue 1/2 1997: 80-85.

Bechtler, Th. W. 1985. "Hat Ihr Management die "Niks" schon verschlagen?" io-Management 54:373-375.

Berger, U., V. H. Schmidt, et al. (1991). Neue Technologien - verschenkte Gelegenheiten? Opladen, Westdeutscher Verlag.

Betcherman, G. (1996). Workplace Transformation in Canada: Policies and Practices. Managing Human Resources in the 1990s and beyond. B. Downie and M. L. Coates. Kingston, Ontario, IRC Press, Queen's University. Awelt.

Betcherman, G., K. McMullen, et al. (1994). The Canadian Workplace in Transition. Kingston, Ontario, IRC Press, Queen's University.

Beyeler, H. U. Gefordertes Schweizer Bildungswesen. Der MBA als Antwort der Privatwirtschaft. (Neue Zürcher Zeitung 18. 2. 1995: 22).

Biervert, B., K. Monse, et al. (1991). Informatisierung von Dienstleistungen. Opladen, Westdeutscher Verlag.

Blauner, R. (1964). Alienation and Freedom. Chicago/London.

Bleicher, K. (1988). Die Organisation der Zukunft. IBM-Nachrichten: 7-13.

Bobillier, C. (1993) Zulieferer im industriellen Produktionsprozess (NZZ 20. 9. 1993).

Böhle, F. and B. Milkau (1989). Neue Technologien - neue Risiken. Neue Anforderungen an die Analyse von Arbeit. Zeitschrift für Soziologie 18(4): 249-262.

- Boxall, P. (1996). The strategic HRM debate and the resource-based view of the firm. *Human Resource Management Journal* 6(3): 59ff.
- Brandenberger K. (1993) Manifest für den Aufschwung. Mit weniger Chefs mehr Kreativität. (Die Weltwoche 26. 6: 18)
- Brewster, C., L. Mayne, et al. (1997). Flexible Working in Europe. *Journal of World Business* 32(2): 133-152.
- Brodsky, M. (1994). Labor Market Flexibility: a changing international perspective. *Monthly Labor Review* 117(11): 53-60.
- Brooks, S. S. (1995). Managing a horizontal revolution. *Human Resources Magazine* 40(6): 52ff.
- Bruhn, M. (1996). Wie zufrieden sind Schweizer Kunden? *Neue Zürcher Zeitung*. Zürich: 29.
- Bungard, W. (1990). Führung im Lichte veränderter Mitarbeiterqualifikationen. In: *Führung im Wandel. Neue Perspektiven der Führungsforschung und Führungspraxis*. (G. Wiendick and G. Wiswede) Stuttgart, Ferdinand Enke Verlag: 198-230.
- Canadian Labour Force Development Board,. (1994). Putting the pieces together: toward a coherent transition system for Canada's Labour Force. Report of the task force on transition into employment. Ottawa, CA, CLFDB.
- Chatelain, C. (1994). Geht nun auch die Forschung verloren? *Berner Zeitung*. Bern: 15.
- Deker, U. (1984). Anruf genügt: Frau Keller weiss alles. *Computer 1988 - die neue Arbeitswelt in einer Versicherung*. *Bild der Wissenschaft*: 62-73.
- Department of Labor, U. D. o. C. (1994). Fact Finding Report: Commission on the future of worker-management relations. Washington DC, US Department of Labor.
- Diethelm, R. (1996). Vom Mitarbeiter zum Unternehmer. *Tages Anzeiger*. Zürich: 31.
- Egli von Matt, S. (1995). Weiterbildung - einen Elefanten in kleinen Stücken essen. *Tages Anzeiger*. Zürich: 65.
- Fischer, J. and H. Minssen (1987). Weder Reprofessionalisierung noch vollendeter Taylorismus. *Neue Leistungs politik in der Bekleidungsindustrie*. *Soziale Welt* 38: 197-210.
- Francis, A. (1986). *New Technology at Work*. Oxford, Clarendon Press.
- Fullan, M. (1970). Industrial Technology and Worker Integration in the Organization. *American Sociological Review* 35: 1028-1039.
- Geser, H., Bürgisser M. (1998). Bald überflüssig? – oder befreit für Neues? *unimagazin*(2): <http://www.unizh.ch/upd/magazin/2-98/neues.html>.
- Gittleman, M., M. Horrigan, et al. (1998). "Flexible" workplace practices: evidence from a nationally representative survey. *Industrial and Labor Relations review* 52(10): 99-116.
- Goldkamp, H. C. (1994). Start ins Zeitalter der Komponentenindustrie. *Neue Zürcher Zeitung*. Zürich: 67.
- Gottschall, K., M. O., et al. (1985). *Computerunterstützte Verwaltung. Auswirkungen der Reorganisation von Routinearbeiten*. Frankfurt /New York, Campus.
- Graham, L. (1995). *On the Line at Subaru-Isuzu: The Japanese Model and the American Worker*. Ithaca, N.Y., Cornell University Press.
- Green, W. C. and E. J. Yanarella (1996). *North American Auto Unions in Crisis: Lean Production as Contested Terrain*. Albany, N.Y., State University of New York Press.

- Hammer, M. and J. Champy (1995). *Business Reengineering. Die Radikalkur für das Unternehmen*. Frankfurt /New York, Campus Verlag.
- Henwood, D. (1997). Talking about work. *Monthly Review* 49: 18-31.
- Hirsch, P. M. (1993). Undoing the managerial revolution? Needed research on the decline of middle management and internal labor markets. *Explorations in Economic Sociology*. R. Swedberg. New York, Russell Sage Foundation: 145-157.
- Hirschhorn, L. (1984). *Beyond mechanization. Work and technology in a postindustrial age*. Cambridge Mass., MIT Press.
- Hofer, P., I. Weidig, et al. (1989). *Arbeitslandschaft bis 2010*. Nürnberg, Institut für Berufsforschung der Bundesanstalt für Arbeit (IAB) und Prognos AG.
- Hügel, H. and H. Schmid (1984). CAD in Münchener Grossbetrieben. *Neue Technologien und Arbeitswelt*. H. Kohl and B. Schütt. Köln, Bund Verlag: 133-140.
- Huisinga, R. (1990). *Dienstleistungsgesellschaft und Strukturwandel der Ausbildung*. Frankfurt, Verlag der Gesellschaft zur Förderung arbeitsorientierter Forschung und Bildung.
- Katz, C., L. Ruch, et al. (1987). *Arbeit im Büro von morgen*. Zürich, Verlag des kaufmännischen Verbandes.
- Katz, H. (1985). *Changing Gears*. Cambridge, Mass., MIT Press.
- Kelley, M. R. (1990). New process technology, job design, and work organization: a contingency model. *American Sociological Review* (55).
- Kemp, A. (1996). Keine Chance ohne Soft Skills. *FORUM* 12: 24-25.
- Klauder, W. (1990). *Ohne Fleiss kein Preis. Die Arbeitswelt der Zukunft*. Zürich, Edition Interfrom.
- Koch, R. (1981). Aktuelle Veränderungstendenzen kaufmännischer Sachbearbeitertätigkeiten durch die Anwendung elektronischer Datenverarbeitung (EDV) in der Industrieverwaltung. In: *Rationalisierung der Büroarbeit und kaufmännische Berufsausbildung*. (U. Böhm, W. Littek and F. Ortman). Frankfurt/New York, Campus: 118-134.
- Krüger, W. (1995) Die Unternehmen profilieren mit Kernkompetenzen. *Io-Management*. 64: 8-9.
- Kuhn, W. (1995). Reif für die Inselfertigung. *Neue Zürcher Zeitung*. Zürich: 69.
- Lash, S. and J. Urry (1987). *The end of organized capitalism*. Cambridge, Mass., Polity Press.
- Lawler, E., S. Mohrman, et al. (1992). *Employee involvement and total quality management: practices and results in Fortune 1000 Companies*. San Francisco, Jossey-Bass.
- Lowe, G. S. (1998). The future of work: implications for unions. *Industrial Relations (Canadian)* 53(2): 235-258.
- Mathews, J. (1992). New production systems: A response to critics and a re-evaluation. *Journal of Australian Political Economy* 30: 91-128.
- Müller, S. and P. Adelt (1990). Veränderte Anforderungen an Führungskräfte und Mitarbeiter? *Führung im Wandel. Neue Perspektiven für Führungsforschung und Führungspraxis*. G. Wiendieck und G. Wiswede. Stuttgart, Enke: 232-256.
- OECD (1986). *Flexibility in the labor market: The current debate*. Paris.
- OECD (1997). *Technology, Productivity and Job Creation. Vol. 2 Analytical Report*. Paris.

- Osterloh, M. (1994). Tendenzen im Management der industriellen Produktion. Neue Zürcher Zeitung. Zürich: 65.
- Osterman, P. (1994). "How common is workplace transformation and who adopts it?" Industrial Labor Relations Review 47(2): 173-188.
- Pal, S. (1995). Changing employment demand and skill needs in British Columbia: a discussion paper. Online-Publikation
<http://www.ceiss.org/randa/empdeman/titlepg.htm#toc>.
- Paniccia, I. (1998). One, a hundred, thousands of industrial districts. Organizational variety on local networks of small and medium-sized enterprises. Organization Studies 19(4): 667-700.
- Pil, F. K. and P. MacDuffie (1996). The Adoption of High-Involvement Work Practices. Industrial Relations 35(3): 423-455.
- Piore, M. J. and C. Sabel (1984). The second industrial divide. Possibilities for prosperity. New York, Basic Books.
- Prahalad, C. and H. G. (1990). The core competence of the corporation. Harvard Business Review 68(3): 79-91.
- Sattes I. (1996) Erfolgskriterien von Klein- und Mittelunternehmen (io-Management 65, 4, 1996: 33-38)
- Scharfenberg, G. (1993). Die technologische Revolution. Berlin, Landeszentrale für politische Bildungsarbeit.
- Schwizer, A. (1994). Die Sorge um den Schweizer Standort. Neue Zürcher Zeitung. Zürich: 67.
- Sheldon, G. (1995). Die berufliche Flexibilität im Spiegel der Zeit. Bern.
- Smith, V. (1997). New forms of work organization. Annual Review of Sociology 23: 215-340.
- Sorge, A., G. Hartmann, et al. (1982). Mikroelektronik und Arbeit in der Industrie. Frankfurt / New York, Campus Verlag.
- Stevens, J. and C. M. A. (1994). The knowledge, skill, and ability requirements for teamwork: implications for human resource management. Journal of Management 20(2): 503-5321.
- Streeck, W. (1987). Neue Formen der Arbeitsorganisation im internationalen Vergleich. Wirtschaft und Gesellschaft 13: 317-335.
- Waeber, M. (1995). In der Schweiz grassiert das ISO-Fieber. Tages Anzeiger. Zürich: 37.
- Wartmann, E. (1994). Der Gast muss König bleiben. Neue Zürcher Zeitung. Zürich: 65.
- Weber, H. and R. Seltz (1994). Zwischen "Over-engineering" und "Lean Production". Zum Wandel von Organisation und Qualifikation von Ingenieuren. Lean management - Wege aus der Krise. Organisatorische und gesellschaftliche Strategien. H. Weber. Wiesbaden, Gabler Verlag: 158-187).
- Wittmann, A. (1994). Dezentralisierung als Ansatzpunkt. Das Projekt "Attacco" im Riter-Konzern. Neue Zürcher Zeitung. Zürich: 67.
- Womack, J. P. and D. T. Jones (1992). Die zweite Revolution in der Autoindustrie. Frankfurt/ New York, Campus
- Wood, S. J., Ed. (1989). The transformation of work? Skill, flexibility and the labour process. Boston, Mass. Unwin & Hyman.
- Zijdeveldt, C. J. J. (1996). Arbeit in der postindustriellen Welt. Bulletin der Eidg. Technischen Hochschule Zürich, Nr. 263, 16.Okt. 1996: 46-47.

Notes:

On the significance of geographical-cultural factors, see for example the comparative studies of Ivana Paniccias on industrial districts in Italy (Paniccia 1998).

¹ One of the most comprehensive and careful studies is the IAB and Prognos joint study "Working Landscape by 2010" (1989), which makes precise predictions for Germany as to how the quantitative need for different levels of skill will change over the coming 30 years (cf. Hofer/Weidig/Wolff 1989). However, the validity of this study is marred by the fact that, due to the economic, technical and organizational (and global) developments of the early 90s, very different constellations predominate today which necessitate a radical restructuring of all forecast models. Hence the dramatic impact of globalized trade (WTO), of "lean production" and information technology, for example, is insufficiently reflected from today's point of view. In addition, the study's yield in forecasting skill requirements is relatively slight because it concentrates on development trends at the level of "activity fields" (without analysing in detail their causal effect on the demand for skills).

¹ On the increasing destabilization of the employment conditions of senior level employees, see for example Smith 1997; Hirsch 1993; Brodsky 1994.

¹ Cf. for the USA: National Centre on Education and the Economy 1990: 3; and for Canada: Canadian Labour Force Development Board 1994: 20-22).

¹ Cf. here, for example, the American Department of Labor Fact Finding Report, 1994, 45.

¹ The empirical findings of Brewster's study only allow conclusions to be drawn with regard to "numerical" flexibilization tendencies, however (Brewster/Mayne/Tregaskis 1997).

¹ Cf. "Wachsende Bedeutung der Ökologie in der Berufsausbildung und -Weiterbildung" ("The growing importance of ecology in vocational training and education": NZZ 24. 1. 1996).

2. ¹ In the city of Zürich, for example, this figure fell between 1992 and 1995 from 250 to 30 (!) jobs.

¹ It is no coincidence that the concept of lean production has developed in Japan, a country which has an extraordinarily homogeneous population in linguistic-cultural terms.

¹ Cf. "Zwang zum industriellen Wandel" ("Pressure for industrial change" - in Neue Zürcher Zeitung, 17./18. February 1996: 21)